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How do QR Codes Work?

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QR codes, or **Q**uick **R**esponse **codes**, have become an integral part of our daily lives, transforming the way we access information and interact with the world around us (we even have one at the bottom of the document). Developed by Denso Wave in 1994 for tracking automotive parts, QR codes have since evolved into a versatile tool for encoding and retrieving various types of data. These square-shaped codes consist of black squares arranged on a white background in a grid pattern, with distinctive markers in the corners for recognition and orientation purposes.

The encoding process is the key to the functionality of QR codes. They can store a wide range of information, from simple text and URLs to contact details and multimedia content. The arrangement of black and white squares forms a unique pattern that, when scanned by a device's camera, is decoded and presented to the user. The inclusion of error correction techniques ensures data accuracy, even if the code is damaged or partially obscured.

The scanning process is simple yet powerful. When a user scans a QR code using a smartphone or dedicated scanner, the device's camera captures the code's image. Specialized software interprets the black and white pattern, extracting the encoded information. The device then performs error correction, enhancing the code's resilience. This seamless process allows users to quickly access websites, obtain product details, or engage in cashless transactions, showcasing the efficiency and adaptability of QR codes in our technologically driven world. As technology continues to advance, the role of QR codes is likely to expand, making them an enduring feature of our digital landscape.

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